APPENDIX A
PONCE DELEON INLET NAVIGATION IMPROVEMENTS
SECTION 404 (b)(1) EVALUATION

I. **Project Description:**

a. Location. Ponce DeLeon Inlet is located in Volusia County, on the Atlantic Coast of Florida, south of Daytona Beach.

b. Authority and Purpose. The existing Ponce DeLeon Inlet navigation project was authorized under the Rivers and Harbors Act adopted 27 October 1965. The harbor area consists of an entrance channel which provides access to a northwesterly channel along the Halifax River and a southwesterly channel along the Indian River. Both channels connect to the Intracoastal waterway. The local sponsor has requested that the Corps of Engineers (Corps) examine navigation and channel improvements for the following reasons: a) Navigation is a safety problem as documented by the Coast Guard which has recorded numerous groundings and occasional loss of life; b) the entrance and inner channels are quite unstable, requiring the Coast Guard to frequently monitor the area and relocate navigational aids; c) the northward migration of the entrance channel threatens to undermine the north jetty; d) the cost of maintenance for project features is quite expensive as a result of the unstable inlet channel; e) shoreline changes following project construction remain a public concern; and f) a potential breach around the west end of the north jetty threatens property in the area.

c. General Description. A number of alternatives were originally considered but after further study, only 2 alternatives were retained as the proposed plan, a 1000-foot extension of the south jetty and placement of revetment beginning at the west end of the north jetty and extending approximately 2300 feet west. Modeling of Ponce DeLeon Inlet indicates that an extension of the south jetty approximately 1000 feet would improve the inlet's navigation and flow characteristics, particularly in the entrance reach of the channel. This would be true with or without implementation of other alternatives considered. The jetty extension would enable ebb and flow currents to follow a more central flow through the inlet. Flood tide \distribution just south of the seaward end of the extended south jetty would reduce littoral drift and sand deposition within the inlet. The second alternative is the construction of 2300 feet of revetment beginning at the western end of the north jetty. This component is comprised of two parts. The first part is construction of 800 feet of north jetty extension beginning at the west end of the north jetty. The second part is the construction of 1500 feet of revetment beginning at the west end of the jetty extension and extending west. After initial plan formulation, the local sponsor requested that the Corps study the feasibility of an additional alternative. This alternative would have expanded the Federal project to accommodate a proposed commercial marina and seafood processing facility to be constructed on county property on the Intracoastal Waterway in the vicinity of Rockhouse Creek and would involve widening and deepening the IWW in that area. As a result of a Public Workshop held on July 24, 1997, the local sponsor presented a preferred alternative (See Volusia County letter dated March 2, 1998 in Appendix C, Correspondence, of the EA). The preferred plan is the 1000-foot extension of the south jetty.

d. General Description of Dredged or Fill Material.

(1). General Characteristics of Material. The material to be used for the south jetty extension and revetment is granite rock and boulders. Material dredged from the IWW is clean, beach quality sand.

(2). Quantity of Material. Approximately 59,550 tons of stone will be required for the south jetty extension and 39,450 tons for the revetment, for a total of about 100,000 tons. Approximately 360,000 cubic yards of sand will be dredged from the IWW.

(3). Source of Material. The source of the material for the jetty and revetment will be determined by the contractor.

e. Description of the Proposed Disposal Site. The jetty extension will be on sandy bottom in the Atlantic Ocean south of the inlet. The revetment will be placed in a predominantly sandy upland site north and west of the inlet throat. Material from dredging the IWW will be placed either in an upland site adjacent to the IWW (MSA 434C) or the beach south of Ponce DeLeon Inlet.

f. Description of Disposal Method. The material used for the jetty extension can be placed either from a barge, by trucking to the site or a combination of both. Material from the IWW will be disposed of by pipeline dredge.

II. FACTUAL DETERMINATIONS

a. Physical Substrate Determinations.

(1) Substrate Elevation and Slope. The jetty extension will be on gently sloping sandy bottom in water between -15 and -30 feet mlw. The revetment will be on gently sloping sandy uplands and some wetlands between -3 feet and +15 feet mlw. The IWW will be deepened from -12 feet to -16 feet.

(2) Sediment Type. Sand and shell.

(3) Fill Material Movement. Because of the nature of the material there is expected to be no movement.

(4) Physical Effect on Benthos. Any benthic organisms at the site will be covered. Losses at the site of the jetty extension are expected to be minimal because of the shifting nature of the sandy bottom. At the site of revetment construction some wetland organisms will be lost. Benthic organisms at the dredge site will be killed, but rapid recovery of the community is expected.

(5) Other effects. Some wetland vegetation and associated organisms will be lost at the site of revetment construction. Environmental impacts at the site, other than loss of benthic organisms are expected to be minimal.

b. Water Circulation, Fluctuation and Salinity Determinations. The main purpose of the south jetty extension is to effect a change in water circulation patterns in the inlet and in the vicinity of the inlet entrance. Water fluctuation and salinity will not be affected. As with the jetty extension, the purpose of the revetment is to control water circulation within the inlet. Water fluctuation and salinity will not be affected.

c. Suspended Particulate/Turbidity Determinations

(1) Expected Changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Disposal Sites. Except for minor bottom disturbance at the south jetty extension site, little or no turbidity is expected. At the site of revetment construction there may be short-term increases in suspended particulate/turbidity during construction, as will be the situation at the dredge site. Levels are not expected to exceed State standards.

(2) Effects (degree and duration) on Chemical and Physical Values.

(a) Light Penetration. No difference in light penetration at the south jetty extension is expected. Some slight reduction may occur adjacent to the revetment construction and dredge site but should be of very short duration.

(b) Dissolved Oxygen. Dissolved oxygen (DO) levels should be unaffected by construction activities at the south jetty extension, revetment construction site or the dredge and disposal sites.

(c) Toxic Metals and Organics. No effect expected.

(d) Pathogens. Not applicable.

(e) Aesthetics. The proposed north jetty extension and revetment through Lighthouse Point Park will be approximately 12 feet above mean low water very visible and will drastically alter the existing aesthetics. As proposed, it will contrast sharply with the existing sandy inlet beach. The park scrub and marsh/mangrove areas will be visually degraded by the jetty extension and revetment. Measures to decrease the visual effects including covering much of the revetment with sand and replanting native vegetation. Extension of the south jetty and dredging of the IWW should have little or no adverse aesthetic impacts.

(f) Others as Appropriate. None.

d. Contaminant Determinations. No sources of pollution have been identified in the project area; therefore, no contaminants are expected to be encountered.

e. Aquatic Ecosystem and Organism Determinations.

(1) Effects on Plankton. None expected.

(2) Effects on Benthos. Benthos at the construction and dredging sites will be lost. Rapid recovery is expected.

(3) Effects on Nekton. No significant impacts expected.

(4) Effects on Aquatic Food Web. No significant adverse impacts to the food web are expected.

(5) Effects on Special Aquatic Sites.

(a) Sanctuaries and Refuges. Ponce DeLeon Inlet is in unit P08 of the Coastal Barrier Resource System. The U.S. Fish and Wildlife Service has determined that the proposed project features are exempt under Section 6(a)(2) of the Coastal Barrier Improvement Act (CIBA) and /or Section 6(a)(6F) of the Coastal Barrier Resource Act (CBRA).

(b) Wetlands. Approximately 2.1 acres of wetlands will be lost during revetment construction. This will be offset by protection of 4.5 acres of wetlands which otherwise would be lost to erosion. No wetlands will be affected by dredging.

(c) Mud Flats. Changes in current patterns in and adjacent to the inlet may affect mud flats in the area. Whether there will be a gain or loss is not known at this time.

(d) Vegetated Shallows. no impacts expected.

(e) Coral Reefs. Not applicable.

(f) Riffle and Pool Complexes. Not Applicable.

(g) Threatened and Endangered Species. The ranges of a number of listed species include the project area. Where appropriate, protective measures will be taken.

(h) Other Wildlife. Some smaller animals may be affected by habitat loss at the site of revetment construction.

(i) Actions to Minimize Impacts. Standard precautions will be taken to avoid impacting listed species.

f. Proposed Disposal Site Determinations.

(1) Mixing Zone Determination. Not applicable.

(2) Determination of Compliance with Applicable Water Quality Standards. Construction activities will comply with State Water Quality Standards.

(3) Potential Effects on Human Use Characteristic. No adverse impacts expected.

(a) Municipal or Private Water Supply. No affect.

(b) Recreational and Commercial Fisheries. No adverse impacts expected.

(c) Water Related Recreation. By increasing the stability of the inlet water related recreational activities will be afforded increased protection.

(d) Aesthetics. The proposed north jetty extension and revetment placement westward through Lighthouse Point Park will be approximately 12 feet above mean low water, highly visible and drastically alter the existing aesthetics. As proposed, it will contrast sharply with the existing sandy inlet beach. The park scrub and marsh/mangrove areas will also be visually degraded by the jetty extension and revetment. Measures to lessen the visual impact include partially covering the rock with sand and planting native vegetation.

(e) Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites and Similar Preserves. Ponce DeLeon Inlet is in unit P08 of the Coastal Barrier Resource System. The U.S. Fish and Wildlife Service has determined that the proposed project features are exempt under Section 6(a)(2) of the Coastal Barrier Improvement Act (CIBA) and /or Section 6(a)(6F) of the Coastal Barrier Resource Act.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. Over the long term stabilization of the inlet will reduce the cumulative effects of frequent maintenance dredging operations and result in a more stable ecosystem in the area.

h. Determination of Secondary Effects on the Aquatic Ecosystem. Secondary effects on the aquatic ecosystem will be stabilization of the system.